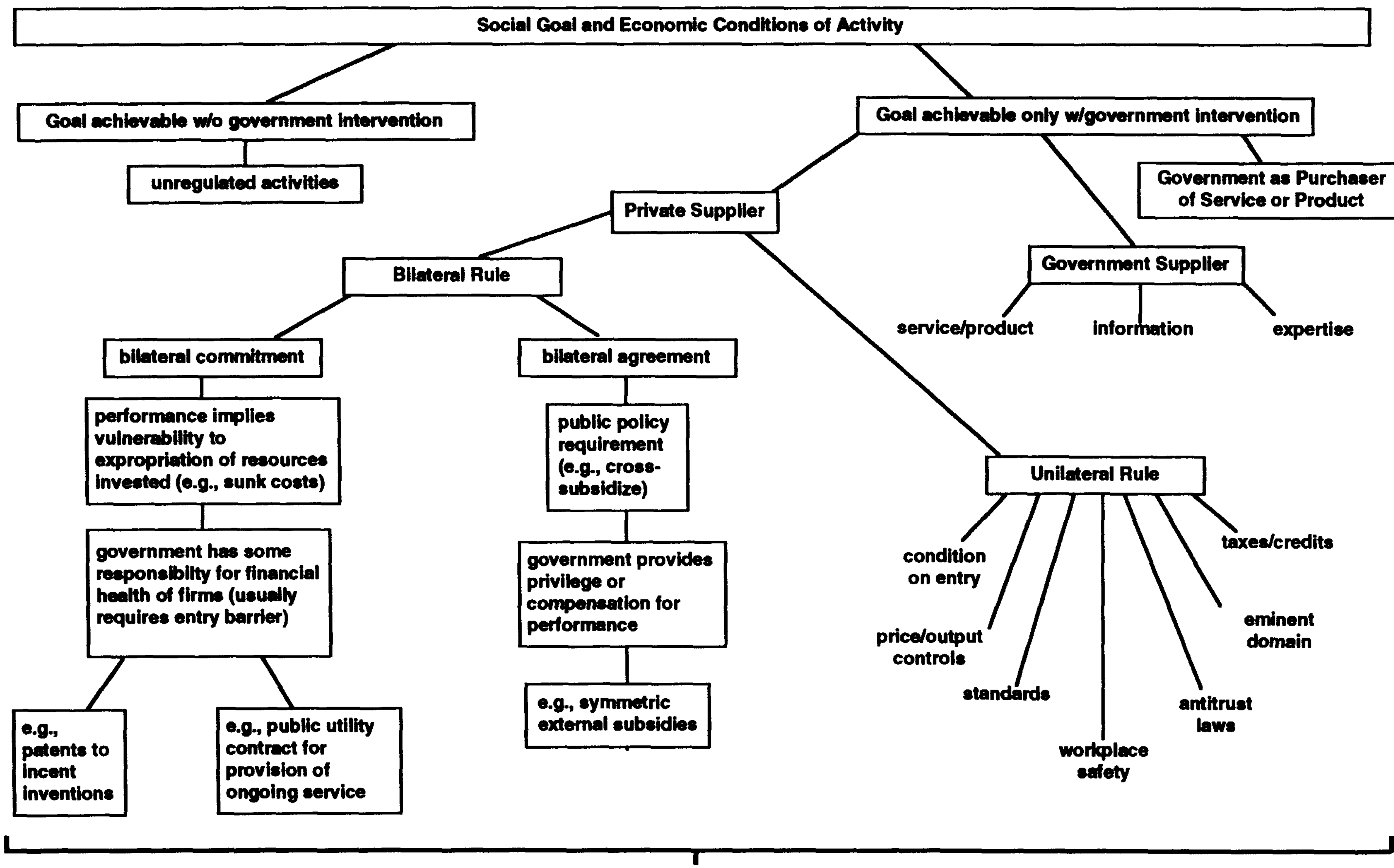
There are limits, however, on any government's use of unilateral and bilateral rules. Important restrictions are imposed, in the United States by provisions of both the United States and State Constitutions. As we will see, it is consideration of constitutional issues that reveals the importance of transitional and long term sustainability problems, arising from effects of changes in regulation on preexisting investments or from the likely prospective effects of new regulations regardless of preexisting investments. The typology of economic regulation just outlined is depicted in Chart 1.



Subject to constitutional limitations on federal and state governmental powers

CHART 1

2. Competition and Choices Among Rules

There are three distinct situations when policy goals may not be achieved with unilateral rules imposed on competitive firms. First, only one or a few firms may be able to generate revenues sufficient to cover the costs of the rule. If too many firms exit, the industry will no longer be competitive; and, in the extreme, no firms will be able to offer service.

Second, the cost of the rule may not be shared equally by all firms, either because the requirement is asymmetrically imposed or because firms differ in their ability to evade the requirement. If the financial burden of a unilateral rule is greater for some firms than for others, those firms bearing the greatest burden will be driven from the industry. This is a problem if those for whom the burden is least are merely better able to avoid obeying the rule, or if, due to the way the rule is designed or enforced, their burden is less than for other firms in the same industry. In this case, otherwise efficient firms may be driven from the industry and competitive outcomes will be characterized by adverse selection favoring those firms that are best at either evading the unilateral rule or influencing the political process to their advantage.

In many situations where unilateral rules are not compatible with competition, whether due to the high costs of compliance or to asymmetry of incidence, it may be possible to preserve competition through compensation provided to firms under a bilateral agreement. Food stamps given to low income individuals in the U.S. is an example. If grocery stores were required to sell food below cost to low income consumers, competition would favor the stores most successful in discouraging their patronage. Use of food stamps to compensate grocery stores for such sales solves this problem. Proposals for low income vouchers for telecommunications services rely on a similar logic, although the analogy may not be valid in all circumstances.[6]

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[6] For analyses of the logic and feasibility of telecommunications vouchers in urban and rural areas,

Third, the desired behavior may be financially feasible only if competition is suspended. This occurs when bilateral agreements are inadequate because a firm's vulnerability to expropriation of sunk investment requires assurance through some form of entry barrier.[7] A bilateral commitment is then required, as with the regulatory contract situation described earlier. As Goldberg[8] points out, when the supply of a product or service is characterized by substantial sunk costs, the risk that customers may turn to an alternative supplier after sunk costs have been incurred increases the price at which a firm will be willing to offer service and may actually preclude the provision of service entirely. In this case, a long term commitment that precludes customer purchases from competing providers, or perhaps specifies compensation to the original supplier in such an eventuality, reduces supplier risks and the price at which service will be offered.

III. Applying the Framework to Universal Service Policy

A. Traditional Universal Service Policy Under Monopoly

Although there may be disagreement as to the historical meaning of the term,[9] universal service has generally come to mean, at a minimum, ubiquitous access to basic, analog voice grade service at affordable rates. But universal service has also come to mean more than just affordability and ubiquity. It is also identified with a maze of regulatory mechanisms, creating a price structure that would not have developed in competitive markets, to address a number of other universal service policy subgoals associated with different social or economic problems. For example, in the U.S. the prices of various telecommunications services are geographically averaged or include rate elements

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respectively, see Panzar & Wildman, "Network competition and the provision of universal service," 4 Journal of Industrial and Corporate Change, 711-720; and Panzar & Wildman, "Competition in the Local Exchange: Appropriate Policies to Maintain Universal Service in Rural Areas," Working Paper, Northwestern University, Evanston, Illinois (September 1993).

[7] Note that the barrier to entry is effective after the firm has accepted a request to provide service. There may still be vigorous competition *ex ante* among firms vying to be the service provider, such as in auction or bidding situations.

[8] *Supra* note 5.

[9] Mueller, "Universal service in telephone history: a reconstruction," 17 Telecommunications Policy, 352-369 (1993).

designed to collect support for low income customers, hearing-impaired individuals, or customers in high cost local exchanges.[10] This price structure has been traditionally maintained through grants of monopoly franchises.

Table 1 lists some of these universal service subgoals and their corresponding social and economic problems. The last column of Table 1 also delineates the policies that have traditionally been employed to fulfill these subgoals through monopoly franchises in the U.S. With the exception of dual party relay services for the hearing impaired, which are provided under a separate bilateral commitment, all of these policies were administered as components of a bilateral commitment based on franchise monopoly.

TABLE 1
Bilateral Commitment Based on Franchise Monopoly

Social Goal	Economic and Social Problems	Traditional Policies Under Franchise Monopoly
1. Telecommunications services should be provided at reasonable prices.	1. Market power results in high prices for an "essential" service and reduction in network penetration to less than socially efficient levels.	1. Common carrier obligations, price or earnings regulation, and inter- and intraservice support flows.
2. Provide economically disadvantaged individuals with access to certain basic telecommunications services.	2. Individuals who can not afford cost-based prices value service at less than the social value of their subscription.	2. Lifeline (subsidized monthly) rates; linkup programs to subsidize installation fees.
3. Provide individuals with disabilities with access to special basic telecommunications services.	3. The costs of services needed for those with certain disabilities exceed "fair" prices, and, if reflected in prices, may reduce penetration to less than socially efficient levels.	3. Dual party relay service is provided below cost to those with disabilities. Providers bid to provide service; government selects the provider & provides for funding.

[10] See, e.g., Weinhaus, C., et al., "Who pays whom? Cash flow for some support mechanisms and potential modeling of alternative telecommunications policies," Alternative Costing Methods Project, Program on Information Resources Policy, Harvard University, Cambridge, MA, Nov. 15, 1992; Weinhaus, C., et al., "What is the price of universal service? Impact of deaveraging nationwide urban/rural rates," Telecommunications Industries Analysis Project, University of Southern California, Boston, MA, July 26, 1993.

4. Provide individuals who are costly to serve with access to certain basic telecommunications services and/or capabilities.	4. Locational factors raise the cost of service to some people above "fair" prices; cost-based prices may reduce penetration below socially efficient levels.	4. Carrier of last resort obligations, interservice and intraservice customer class support flows, and high cost assistance funding.
5. Telecommunications services are to be provided at some minimum level of quality.	5. Individual providers fail to fully internalize costs and benefits of service quality improvements.	5. Certification requirements on providers; service quality regulations; and interconnection related requirements.

In recent years, however, substantial changes have occurred in U.S. federal and state telecommunications regulation as restrictions on entry have been relaxed and competition encouraged. The general pattern of regulatory changes in the U.S. has been the relaxation of restraints on entry for new entrants and the reduction of restraints on prices and earnings for incumbents. At the same time, regulators have attempted to retain most of the performance obligations listed in Table 1 as unilateral requirements with higher performance expectations for incumbent providers. As a result, with removal of the monopoly franchise, almost all of the old bilateral arrangements have been converted to asymmetrically imposed unilateral rules. This change from primary reliance on a bilateral commitment to asymmetric unilateral rules is summarized here in Table 2.

TABLE 2
Shift from Bilateral Commitment Towards Asymmetric Unilateral Requirements

Social Goal	New Regulatory Approach	Unilateral v. Bilateral Rule
1. Telecommunications services should be provided at reasonable prices.	1. (a) Common carrier obligations, (b) price regulation, (c) earnings regulation, and (d) interservice and intraservice customer class cross-subsidies are required of some, but not all providers.	1. (a) - (d) are asymmetrically imposed unilateral requirements that were obligations under the old bilateral commitment.
2. Provide economically disadvantaged individuals with access to certain basic telecommunications services and/or capabilities.	2. Lifeline and Linkup programs provided by traditional local exchange carriers.	2. A bilateral agreement using external support where fully compensatory govern-ment funding is provided; elsewhere an asymmetrically applied unilateral require-ment that was previously an obligation under the old bilateral commitment.
3. Provide individuals with disabilities with access to certain basic telecommun-ications services and/or capabilities.	3. Dual party relay service bidding and funding programs (same as described in Table 1, column 3).	3. A bilateral commitment of fairly short duration funded through external support with open bidding to deter-mine identity of the private provider and a barrier to entry until the service is rebid.
4. Provide individuals who are costly to serve with access to certain basic telecommun-ications services and/or capabilities.	4. (a) Carrier of last resort obligations imposed on some, but not all, providers; (b) interservice and intraservice customer class cross-subsidies imposed on some, but not all providers; and (c) high cost assistance funding.	4. (a) - (b) are asymmetrically imposed unilateral requirements in most situations; (c) is a bilateral agreement to the extent that the high cost funds are provided to carriers serving customers who do not cover their own costs.
5. Telecommunications services are to be provided at some minimum level of quality.	5. (a) Certification requirements on providers are reduced or eliminated; (b) minimum service quality standards imposed on some, but not all, providers; and (c) interconnection related requirements.	5. (a) - (c) are a mixture of symmetrically and asymmetrically imposed unilateral requirements.

B. Competition and Sustainable, Long Term Universal Service Policies

As just described, at the present time in the United States new entrants generally do not bear the same regulatory obligations as incumbents, giving rise to asymmetric regulatory burdens. Such asymmetric burdens can not be sustained in a competitive equilibrium, and are recognized by both scholars[11] and government officials[12] as a threat to policies promoting universal service. Notwithstanding these sustainability problems, most analyses of local competition and asymmetric regulation have concentrated on their economic efficiency properties.[13] But, the typology of unilateral and bilateral rules presented here provides a framework for examining the long term and transitional sustainability problems of recent universal service policies and for making future policy recommendations.

1. Use of Unilateral Rules

For unilateral rules to be features of a long-run competitive equilibrium, they must be applied symmetrically, that is, in a competitively neutral manner. If not, the asymmetrically advantaged firms will drive out the rest, namely those firms bearing the obligations on which the fulfillment of the underlying service goals is dependent. In this way, continued fulfilllment of universal service goals becomes dependent on the financial viability of firms, or possibly the industry, upon which the obligations of other unilateral rules are imposed.

The need for symmetry of unilateral rules to sustain the financial viability of a firm or industry is recognized under the Equal Protection Clause of the U.S. Constitution. For example, the viability of a firm may be affected by the asymmetric application of a tax or fee to one type of firm within an industry but not to other firms within the industry providing

[11] See, e.g., Schankerman, "Symmetric Regulation for a Competitive Era," Paper prepared for the Twenty-Sixth Annual Conference Institute of Public Utilities in Williamsburg, Virginia (December 1994).

[12] See, e.g., Haring, "Implications of Asymmetric Regulation for Competition Policy Analysis," FCC Office of Plans and Policy Working Paper No. 14 (December 1984), pp. 30-31.

[13] For example, Weisman discusses technical efficiency losses and dynamic efficiency losses as well as the breeding of inferior competitors who are adept at imitation rather than innovation. Weisman, "Asymmetrical Regulation: principles for emerging competition in local service markets," 18 Telecommunications Policy 499-505 (1994).

competing services. Tax laws were found to be unconstitutional in Ohio and Wisconsin because they were applied differently between resellers and facilities-based telecommunications providers.[14] In addition, the viability of an industry may be affected by the cumulative financial burden of taxes or fees imposed by multiple governmental units acting similarly, or by the tax or fee imposed by a single governmental unit, where there is no relationship between the burden of the tax or fee and its stated purpose.[15]

Some of the current set of unilateral rules pose no problems in the long run, such as minimum service quality standards. Standing alone, some forms of price regulation may also be sustainable, since competition will force prices to more accurately reflect underlying costs; but they may not be sustainable in combination with other rules. However, the various cross-subsidies embedded in current prices reflect a social unwillingness to accept the outcomes of cost-based pricing. As more fully discussed in Attachment 1, it is unlikely cross-subsidies can be maintained as unilateral rules, even if the unilateral rules are applied symmetrically as a matter of law (or on their face). This is because of the fundamentally non-remunerative nature of a cross-subsidy requirement; in addition, symmetric enforcement of cross-subsides would be extremely difficult and the incentive to avoid mandated cross-subsidies would be great, thereby creating asymmetries' favoring those best positioned to avoid them.

Common carrier obligations, where carriers must provide service to similarly situated customers on equivalent terms, are also likely to be unsustainable with competition.[16] While such obligations may be easy to enforce for monopolists, it would be virtually impossible to police the marketing plans of multiple providers, much less do so with equal force, to ensure that information of competitive offerings is not selectively

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[14] MCI Telecommunications Corp. v. Limbach, 68 Ohio St. 3d 195 (1994); Sprint Communications Corp. v. Wisconsin Bell, 155 Wis. 2d 184 (1990).

[15] For a fuller discussion of Equal Protection Clause analysis, see pp. 29-33 of Attachment 1.

[16] See Noam, E. "Beyond liberalization II: the impending doom of common carriage," 18 Telecommunications Policy 435-452 (1994).

targeted or that consumer inertia does not leave incumbent providers with the least profitable customers.

Carrier of last resort obligations require a provider to expand capacity to serve new customers upon reasonable request and constitute a barrier to exit from areas already served. Since the very need to enforce carrier of last resort obligations implies that service must be provided at non-compensatory rates, such obligations also pose the threat of burdensome cross-subsidy and the associated problems of enforcement as unilateral rules. Furthermore, since new entrants can assure themselves lower burdens than incumbents through selective entry, unless symmetry in geographic coverage is required, asymmetric incidence of carrier of last resort obligations is virtually assured.

2. Use of Bilateral Rules

The extent to which sustainability can be achieved by converting unilateral rules to bilateral agreements depends largely on whether competition would naturally emerge in the absence of asymmetric obligations. Customer class cross-subsidies may be accomplished through bilateral agreements if the group of subsidy recipients is sufficiently small so that the incremental costs of facilities to serve such recipients are low, particularly if rapidly growing demand would create a need for similar facilities in the near future. But, if the class of subsidy recipients constitutes a substantial portion of all customers, the sunk cost investments at hazard to regulatory expropriation will also be large, and assurances of the type that can be provided only through a bilateral commitment are likely to be required. Thus, policy decisions as to the size of the class of subsidy recipients will affect the extent to which open competition is actually achievable.

As stated earlier, both common carrier and carrier of last resort obligations are likely to not be sustainable as part of a competitive equilibrium if imposed by unilateral rules. To the extent that incremental sunk costs required to meet common carrier obligations are small, then bilateral agreements should be sufficient; if they are large, bilateral commitments will be required.[17] As for carrier of last resort obligations, large sunk investments are still required under present, particularly wireline, technology to provide local loops. This poses vulnerability to expropriation of investment for the incumbent providers as well as vulnerability for those customers who are not attractive to other entrants. These same vulnerabilities appear even with multiple providers, where competitive bidding is used to select providers and set the fees for provision of service. Given these vulnerabilities, it is unlikely that bilateral commitments can be avoided to manage carrier of last resort obligations any time soon.

In the future these vulnerability problems may be substantially overcome as technology evolves; however, the incentive to avoid the obligation to provide service at unremunerative rates would remain. First, continuous development of wireless technology, for which minimum efficient scale is considerably less than for wireline technology, may reduce or eliminate sunk cost vulnerability. As minimum efficient scale shrinks, each firm becomes less vulnerable to the purchase decisions of individual customers. Falling costs of switching technology may have a similar effect for wireline services. Second, such reduction in supplier costs is also likely to reduce customer vulnerability as new entrants provide customers more options. In addition, the trend in fiber technology that makes it prudent for suppliers to install excess capacity further reduces customer vulnerability by ensuring that existing carriers can take on new business.

The problems likely to arise if the structure of current universal service policies are perpetuated as local telecommunications markets become more competitive, as well as proposed remedies for sustainable universal service policies, are summarized in Table 3.

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[17] The incentive to cheat on common carrier obligations through price discrimination would still be present under a bilateral agreement. One way to counter this tendency is to impose a penalty on providers for noncompliance at a high enough rate so that the threat of losing the right to offer service deters cheating. Under a bilateral commitment, the fear of being denied a continued right to serve and the ability to recover substantial sunk costs could promote compliance.

Table 3
Unsustainability of Unilateral Rules
and Proposed Remedies in a More Competitive Industry

Current Policy	Is Policy Sustainable?	Remedy if Needed
Asymmetric unilateral rules in general.	No.	Apply unilateral rules symmetrically.
Cross-subsidies as symmetric unilateral requirements.	No. Symmetry not enforceable.	Replace with bilateral agreement if sunk cost exposure not large. Otherwise, replace with bilateral commitment.
Common carrier obligations as symmetric unilateral rules.	No. Symmetry not enforceable.	Replace with bilateral agreement if sunk cost exposure not large. Otherwise replace with bilateral commitment.
Support for low income customers as symmetric unilateral rules.	No. Symmetry probably not enforceable.	Bilateral agreements should work.
Carrier of last resort obligations and service requirements for high cost areas as symmetric unilateral rules.	No. Conditions for symmetric application not yet satisfied and enforceability doubtful.	Bilateral commitment is needed until technology changes.

Thus, with competition, we see that long term sustainability of rules for universal service goals has various requirements. Some obligations may be imposed as unilateral rules, but they must be symmetrically applied so as to be competitively neutral in effect. But, many requirements must be imposed as bilateral rules. Where vulnerability to expropriation of investment is low, bilateral agreements will suffice, otherwise, bilateral commitments are required.

The Joint Board recommendations must be analyzed for their long term sustainability in light of what we have learned is not sustainable under current policy. Do the rules embodied in the Joint Board recommendations correct important deficiencies of current policy? Or, do they create new sustainability problems? These questions are addressed in Section IV.

C. Managing the Transition to a More Competitive Industry

Section III.B showed that bilateral commitments are likely to be an important component of telecommunications regulation for long term sustainability of universal service goals. Thus, the credibility of the promises by government as a party to any future bilateral commitments with regulated firms will continue to be important to its ability to obtain compliance from service providers in the future. This means that, for practical reasons and independent of moral obligations, government cannot casually disregard the financial implications of prior (often implicit) commitments to regulated firms made under the old bilateral commitment.

This economic function of addressing the financial implications of prior commitments is embodied in the legal system in the U.S., particularly under the jurisprudence of various U.S. and State constitutional provisions. We argue that, to manage a successful transition to competition, the principles of these constitutional provisions must be applied in honoring prior and future bilateral commitments within the telecommunications industry.

In this regard, the relevant provisions are the Takings,[18] Due Process,[19] Supremacy,[20] and Contract[21] Clauses. Although concepts of equity and fairness underlie all of them, these Clauses specifically address different types of sustainability problems arising from preexisting investments. An in-depth legal review of these provisions is provided in Attachment 1, and the results are summarized in Table 4.

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[18] The Takings Clause of the Fifth Amendment to the Constitution applies to the federal government and provides in relevant part "nor shall private property be taken for public use, without just compensation."

[19] The Due Process Clause of the Fourteenth Amendment to the Constitution applies the Takings Clause to State governments and provides in relevant that "no person shall be...deprived of life, liberty or property, without due process of law."

[20] The Supremacy Clause provides that "This Constitution, and the Laws of the United States which shall be made in Pursuance thereof...shall be the supreme Law of the Land; and the Judges in every State shall be bound thereby, any Thing in the Constitution or Laws of any State to the Contrary notwithstanding." U.S. Constitution, art. VI, cl. 2.

[21] The Contract Clause provides that "No State shall...pass any...Law impairing the Obligations of Contracts." U.S. Constitution, art I., sec. 10, cl. 1.

TABLE 4
Constitutional Limits on Government Action

Constitutional Clause	Government Relationship to Utility	Government Action Subject to Limitation	Economic/Social Problem	Government Action Prohibited	Remedy
Takings & Due Process Clauses	fed or state <----> utility govt	unilateral or bilateral rule	equity & fairness; sustainability of property rights system	confiscation	invalidation of federal or state action; or conversion of unilateral rule to bilateral rule through provision of compensation
Supremacy Clause	fed <----> utility state <----> utility	conflicting unilateral or bilateral rules between state and federal governments	equity & fairness; sustainability of federal policy; sustainability of firm	interference with federal policy; trapping of costs of firm	invalidation of state action (i.e. federal preemption)
Contract Clause	state 1 or private <----> utility party (at time period 1) utility <---- state 1 (at time period 2)	state impairment with preexisting private contracts or its own public contracts	equity & fairness; sustainability of property rights system	substantial impairment of contractual obligations which is not necessary or reasonable to serve a public purpose	invalidation of federal or state action

One type of sustainability problem relates to the need to generally support economic investments by individuals and firms that are rooted in the underlying property rights system, as exemplified by the Takings, Due Process, and Contract Clauses. Other sustainability problems relate to the financial viability of a specific firm. In the case of public utilities, the Takings and Due Process Clauses ensure financial viability of the utility with regard to changes in regulation by a given governmental unit by prohibiting confiscation; and the Supremacy Clause ensures the financial viability of a utility by preventing "trapping" of costs arising from conflicting regulations between federal and state governmental units.

The results of the legal review depicted in Table 4 can also be reorganized to show the Constitutional limitations on unilateral and bilateral rules based on their transitional effects arising from preexisting circumstances. Such a reorganization is provided in Table 5.

TABLE 5
Constitutional Limits on Unilateral and Bilateral Rules Based on Preexisting Circumstances

Constitutional Clause	Government Action Subject to Limitation	Preexisting Circum-stances	Threat to Sustainability	Remedy
Takings & Due Process Clauses	Unilateral or bilateral rule.	Existing property investment; or investment based on existing bilateral commitment.	Sustainability of property rights system; or sustainability of existing bilateral commitment.	Invalidation of rule; or conversion of unilateral rule to a bilateral rule.
Supremacy & Commerce Clauses.	Unilateral or bilateral rule.	Existing federal rule.	Sustainability of federal policy; or sustainability of firm.	Invalidation of rule.
Contract Clause.	Unilateral or bilateral rule.	Investment based on existing bilateral rule.	Sustainability of property rights system; sustainability of bilateral rule.	Invalidation of rule.

Fundamentally, the sustainability problems depicted in Table 5 arise from prior investments - whether in real property, based on existing contracts, or based on existing bilateral rules. The discussion in Section III.B. also recognized sustainability problems arising from preexisting circumstances when changes in regulatory rules occur. However, the only preexisting circumstance commonly addressed in the economic literature is the existence of a bilateral commitment in the form of a regulatory contract. In this regard, the economic literature offers remedies in terms of the recognition of expropriated investments, whereby either government is compelled to compensate for the diminished value of or inability to recover the investment or the firm is permitted to compensate the government to avoid the loss. Beyond that, little guidance is given as to how to manage the transition of an entire industry from one regulatory regime to another.

Yet, prior constitutional jurisprudence provides extensive experience in addressing expropriation problems under specific circumstances. The Takings and Due Process Clauses address expropriation problems as to existing real property rights and the sustainability of utilities under existing bilateral commitments. The Supremacy and Commerce Clauses address expropriation problems resulting from the conflict between federal and state rules, and the Contract Clause addresses those problems arising from conflicts with existing contracts, whether public (between the state and a private party) or private (between private parties). As such, the case law does provide us with some critical insights for addressing changes from traditional regulation to a more competitive environment in the U.S.

First, governments must recognize the existence of bilateral commitments with traditional telecommunications providers and anticipate the new confiscation problems that may arise from altering significant aspects of such bilateral commitments. The existing case law in the U.S. is based on confiscation problems that arose from ratemaking decisions. It is likely that new types of confiscation problems will arise with the elimination of the monopoly franchise. Confiscation claims have already occurred in the context of physical collocation[22] and interconnection requirements.[23] They are also likely to occur if government attempts to continue asymmetric imposition of cross-subsidy requirements and carrier of last resort obligations. For sustainability purposes, governments must be willing to grant remedies for these new types of confiscation, applying and perhaps expanding the principles underlying the Takings and Due Process Clauses.

Second, governments must be willing to renegotiate or establish new bilateral commitments as a whole. Piecemeal changes in regulatory rules may render existing,

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[22] See Bell Atlantic Telephone Companies v. FCC, 24 F.3d 1441 (D.C. Cir. 1994).

[23] The FCC's Interconnection Order, First Report & Order, Docket No. 96-98 (Aug. 8, 1996), is currently under appeal to the 8th Circuit Court of the Federal Court of Appeals in Iowa Utilities Board v. FCC, No. 96-3321 & Consolidated Cases.

modified, or even new commitments unsustainable. This process can be facilitated in the U.S. if the courts are willing to interpret the Contract Clause so as to more readily recognize when a public contract exists.[24] For example, the courts should recognize the traditional regulatory contract between a State and a LEC, notwithstanding the lack of written, legal terms it traditionally seeks to determine the existence of such a public contract. In this way, a remedy will be more readily available if action by that governmental unit breaches the contract, and the government will then have a greater incentive to negotiate a sustainable bilateral commitment in the first place.

Third, governments should be more attentive to the ramifications of conflict between rules of different governmental units. New types of federal-state conflicts may arise, the effects of which we have little experience with due to the rapidity of the transition from monopoly franchises to competition. However, this will likely require that the standards for determining the need for federal preemption under the Supremacy Clause in the U.S. will have to be broadened. For example, the impossibility standard used in the U.S. for determining the existence of federal preemption will need to be interpreted more broadly to include situations where the "impossibility" of complying with both federal and state rules does not become apparent except upon analysis over a longer time period or through the interactions of complex combinations of governmental rules.[25]

By recognizing confiscation claims arising from existing bilateral commitments, being willing to renegotiate or to establish new bilateral commitments, and anticipating and resolving conflicts among rules of governmental units, governmental bodies can better ensure the implementation of a sustainable transition to rules for universal service goals that embrace competition where possible. As exemplified by the various U.S.

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[24] This was recently done by the U.S. Supreme Court in United States v. Winstar Corp., 1996 v.s. Lexis 4266 (1996) (Congressional Act breached federal contract between a federal agency and a savings and loan institution).

[25] See pp. 33-35 of Attachment 1 for a discussion of the Supremacy Clause and the impossibility doctrine.

Constitutional Clauses described above, a sustainable transition to new universal service rules is just as important as the long term sustainability of such rules. For this reason, the Joint Board recommendations must be analyzed for their transitional sustainability properties as well. Such analysis follows in Section IV.

IV. SUSTAINABILITY OF JOINT BOARD RECOMMENDATIONS ON UNIVERSAL SERVICE

Applying the principles and remedies set forth in Section III for achieving both long run and transitional sustainability, we will now review the Joint Board recommendations for their sustainability properties. The following analysis will show that some of the recommendations consist of rules that are not sustainable. Recommendations for correcting the underlying sustainability problems are also offered.

For ease of organization, the Joint Board recommendations will be considered according to the following groups of rules: the mechanism for collecting contributions for the federal universal service fund; programs for low income customers; universal services for eligible educational institutions and libraries; universal services for rural health care providers; and rules for carrier of last resort obligations and eligible carriers.

A. The Collection Mechanism for Federal Universal Service Funds

In section 254(b)(4), Congress states that the collection mechanism for universal service funds should consist of equitable and nondiscriminatory contributions from all providers of telecommunications services. In this regard, the FCC has the authority to require contributions from telecommunications carriers that provide interstate telecommunications services (sec. 254(d)), and the state commissions have the authority to require contributions from telecommunications carriers that provide intrastate telecommunications services (sec. 254(f)).

In order to implement these provisions, the Joint Board has recommended a number of new policies (or rules in our terminology). These recommendations can be categorized in terms of: how they identify the entities subject to a levy for a universal service fund, the methodology for calculating the relevant revenue base, and the extent to which levies can be recovered in service prices to customers. In what follows we analyze the Joint Board's policy proposals according to these categories, classify them according to the regulatory typology set out above, and determine whether they are or are not sustainable. Remedies are offered for those found to be unsustainable. The salient points of this analysis are summarized in Table 6.

1. Entities Subject to the Levy

In applying section 254(d), the Joint Board recommends that the definition of a carrier that provides interstate telecommunications services be construed as broadly as possible (pars. 784-791). Thus, such carriers are to include both wireless and wireline providers (par. 785). By broadly defining the carriers subject to the levy, the Joint Board recommends implementation of a unilateral rule, symmetrically applied to all carriers of interstate services. This is likely to be a sustainable rule, at least among all entities considered to be telecommunications carriers. However, to the extent there are close substitute services available from entities that are not considered to be telecommunications carriers under TA96, then a long term sustainability problem will be created. This is because, as frequently found by applying the Equal Protection Clause to the effect of taxes or levies, the levy would have a disparate impact on competing carriers and non-carriers. This scenario is likely to occur with respect to Internet and enhanced service providers, which are currently considered to not be telecommunications carriers. To correct this sustainability problem, the entities subject to the levy would need to be expanded to include the relevant providers of closely substitutable services.

2. Revenue Base

As to the revenue base of carriers that provide interstate telecommunications services, the Joint Board recommends that, at least for federal funds to support universal service to educational institutions and libraries, the FCC impose a levy on both the interstate and intrastate revenues of such interstate providers. As with other taxes and levies, this is a unilateral rule, but it is applied asymmetrically to carriers of interstate services and carriers of intrastate-only services because the intrastate revenues of only one class of carriers would be subject to the rule. Such an asymmetric rule poses a long term sustainability problem because of the disparate impact of placing a federal levy on intrastate revenues of interstate carriers but not on the intrastate revenues of competing intrastate-only carriers.

However, it is unlikely that this asymmetry can be corrected by simply extending the levy to the intrastate revenues of intrastate-only carriers, because to do so would be beyond Congress' authority under the Commerce Clause of the U.S. Constitution. For this reason, other remedies must be sought. In order to avoid any category of carrier — providers of interstate-only, interstate and intrastate, and intrastate-only service— from bearing a different tax burden on its services that compete with those of another carrier, the best available remedy is to: (1) permit the federal levy to be applied only to the interstate revenues of interstate carriers; and (2) require that state levies, if they exist, to be applied only to the intrastate revenues of intrastate service providers.

Even this remedy, however, would not eliminate all arbitrage problems. If the burdens of the federal and state levies on interstate and intrastate services, respectively, differ, there would still be the incentive to: reroute intrastate calls in order to make them interstate ones, if the intrastate levy is higher, and vice versa; or to package interstate and intrastate service offerings so that the revenues are difficult to separate and then have only the lower of the two levies apply to the total revenue derived from such a service offering. For this reason, the FCC and the state commissions would need to be alert to the various techniques employed by providers to avoid the higher levy. This is particularly so, if some providers are in a better position than others to engage in such techniques - such as the current ability of interexchange carriers, but not the Bell Operating Companies, to package interstate and intrastate toll services.

Given the current jurisdictional limits of Congress and the FCC as to the entities that may be subject to a federal levy, the above remedy is probably the best that can be accomplished. Such a remedy should apply not only for levies to be made for purposes of generating contributions for universal service support to educational institutions and libraries, but for levies imposed for any other universal service support under section 254, such as for low income customers, health care providers, or high cost customers.

3. Levy on Net Revenues and Differential Abilities to Pass Through the Levy

The Joint Board recommends that the federal levy be applied to the gross revenues (as defined above), net of payments to other carriers (par. 807). The same rule applies to all carriers subject to the levy, and, as such, is a unilateral rule symmetrically applied to all carriers. At first glance, it would appear that this methodology is competitively neutral in that, by its terms, it does not place a double tax on any service, as would happen if the levy was placed on simply gross revenues. However, in combination with other restrictions, a levy on net revenues is not in effect, competitively neutral in its impact because all carriers will not have the same ability to pass the levy through to customers. As a result, this net revenues methodology is not sustainable in the long run unless the pass through problem is corrected.

The Joint Board has failed to provide an explicit mechanism whereby carriers can pass through the levies assessed to them into customers' rates. In reality, however, carriers will pass through the levies to customers, to the extent that the marketplace will allow, rather than pay the levies from retained earnings. However, there are two sources of rules that do prohibit the pass through of levies but they apply only to incumbent local exchange carriers (ILEC's).

First, the Joint Board recommends that the ILEC's be prohibited from adjusting their rates for unbundled network elements to account for the amount of the levy (par.

808).[26] Since competitive local exchange providers are not required to sell unbundled network elements, and the prohibition by its terms refers only to ILEC's, this prohibition is a unilateral rule asymmetrically applied to ILEC's. It is essential to understand that this prohibition undermines the long term sustainability of the levy because it creates an asymmetric burden on sellers as opposed to buyers of unbundled network elements. The asymmetric financial burden arises in two ways: (a) the seller pays a levy on the sale of the buyer's network elements which the seller is unable to recover from the buyer; and (b) the seller pays a levy on its costs (as reflected in its final service price) for the associated network elements that it utilizes. To correct this sustainability problem, the prohibition must be eliminated.

Second, many state jurisdictions have requirements, such as price caps or rate freezes, which may have the effect of prohibiting the pass through of ILEC's contributions to their customers. Yet, competitive local exchange providers are not subject to such requirements. This creates a levy burden that is higher for ILEC's than their competitors. For this reason, such state requirements also undermine the long term sustainability of the levy structure. The required remedy is for the FCC to preempt all such state requirements to the extent that compliance with them would prohibit pass through of the levy by ILEC's to the same extent permitted for competitive providers.

To ensure that carriers have the same ability to pass through the levy for universal service support, the FCC should provide an explicit mechanism whereby the carriers can collect the levy from customers. Such a mechanism could consist of requiring carriers to add a separate line item to customers' bills to recover the levy. This could be accomplished by still imposing the levy on carrier's net revenues, but could also be done by applying a surcharge directly to retail revenues.

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[26] This prohibition is stated in the first sentence of par. 808 with regard to implementation of the FCC's interconnection rules pursuant to section 251. In the second sentence, the Joint Board does state that carriers can pass through to users an equitable and nondiscrminatory portion of their universal service obligation. In order for these two sentences to not be incompatible, it appears that, in the second sentence, "users" refers to endusers and not to carriers as purchasers of unbundled network elements.

TABLE 6
Analysis of Collection Mechanism

Recommendation	Unilateral v. Bilateral Rule	Is Rule Sustainable?	Possible Remedy
• Entities: Federal levy, applied only to carriers providing interstate telecom-munications services, is to be broadly defined. (pars. 784-791).	• Symmetric unilateral rule applied to all interstate service providers.	• Likely, but depends upon substitutability of services from non-carriers (e.g. Internet & enhanced service providers).	• Over time, may need to extend the levy to all substitutable services.
• Revenue Base: Federal levy to be applied to both inter-state and intrastate revenues, at least for fund for schools and libraries (par. 817).	• Asymmetrically applied unilateral rule between providers of interstate services and providers of intrastate-only services.	• No. Problem may also be exacerbated by combination of federal and state levies.	• Assuming the federal levy can not be imposed on intrastate-only providers, (1) must apply federal levy only to interstate revenues, and (2) require state levies, if any, to be applied only to intrastate revenues.
• Levy on Net Revenues: Federal levy to be applied to gross revenues, net of payments to other carriers. (par. 807)	• Symmetrically applied unilateral rule.	• Yes, unless carriers have different abilities to pass through the levy to customers.	• Eliminate or preempt any federal or state rule to the extent that it would prohibit pass through of levy to customers' rates. Desirable to explicitly pass through levy on customers' bills.

B. Programs for Low Income Customers

Section 254(b)(3) of TA96 provides that low income customers are to have access to telecommunications and information services that are reasonably available, and at rates that are reasonably comparable to, those provided in urban areas. With regard to this section, the Joint Board has proposed several rules for implementation by the FCC. Four of these rules will be analyzed below. The essential points of this analysis are provided in Table 7, using the same format as that used in Table 6.

One method by which the Joint Board recommends that universal service be provided for the benefit of low income customers consists of revisions to existing Lifeline and Linkup programs (pars. 416-429). In this regard, the key feature of these programs is that carriers would ultimately receive compensation from an explicit fund in exchange for providing lower rates under Lifeline and lower installation charges under Linkup. As such, these programs are bilateral agreements, applied symmetrically to all providers of Lifeline and Linkup services. So long as the amount of compensation paid to carriers is sufficient to cover the amount by which rates or installation charges fall below costs for these customers, this bilateral agreement is sustainable in the long run.

The Joint Board also imposes other obligations, such as requiring carriers to provide low income customers with voluntary toll-limitation services at no charge, for which the carrier receives compensation in the amount of the incremental costs of such services from the universal service fund. As with the Lifeline and Linkup programs, such a requirement is structured as a bilateral agreement, applicable to all carriers providing Lifeline service. It should be sustainable over time because it provides compensation to cover the costs of fulfilling the obligation.

The Joint Board also recommends some unilateral rules. In particular, it recommends that carriers providing Lifeline services be prohibited from disconnecting such service for non-payment of toll charges (par. 387) and from requiring service